

What is claimed is:

1. A thin, flexible, optically readable, data storage medium, comprising

a thin, flexible substrate, and

at least one thin, resiliently flexible, optically readable data storage carrier releasably held on said substrate, said at least one carrier having an axis of rotation and optically readable data tracks generally concentric with said axis of rotation,

said substrate and said at least one carrier thereon forming a thin flexible lamination which is resiliently deformable from a substantially planar configuration to a non-planar configuration without substantial separation of the carrier from the substrate and without adversely affecting the optic readability of the at least one carrier, said

said at least one carrier being adapted to be removed from the substrate for subsequent use with an optical reading device which is operable to rotate the at least one carrier to read said data tracks on the carrier.

2. A data storage medium as set forth in claim 1 wherein said at least one carrier comprises a plurality of carrier layers, and wherein said carrier has an outer periphery defined at least in part by a cut line extending through said plurality of carrier layers but not through said substrate.

3. A data storage medium as set forth in claims 1 or 2 wherein said at least one carrier is releasably held on said substrate by a holding force having a peel strength in the range of 10-60 grams.

4. A data storage medium as set forth in claims 1 or 2 wherein said at least one carrier is releasably held on said

substrate by a holding force having a peel strength in the range of 16-26 grams.

5. A data storage medium as set forth in claim 3 wherein said at least one carrier is releasably held on said substrate without the use of adhesive.

6. A data storage medium as set forth in claim 5 wherein said at least one carrier and substrate have mating faces with finishes sufficiently smooth to generate an attraction force between said faces, said holding force comprising, at least in part, said attraction force.

7. A data storage medium as set forth in claim 6 wherein said finishes have a roughness of less than 2 rms.

8. A data storage medium as set forth in claim 1 or 2 wherein said substrate comprises a polymeric film having a thickness in the range of 25-76 microns.

9. A data storage medium as set forth in claim 1 or 2 wherein said substrate comprises a polymeric film having a thickness in the range of 25-50 microns.

10. A data storage medium as set forth in claim 1 wherein said carrier comprising a plurality of carrier layers superposed on said substrate, said plurality of carrier layers comprising a first carrier layer of substantially optically transparent resiliently flexible material having a first face superposed on said substrate and a second face, and a second carrier layer of substantially optically transparent resin having a first face superposed on the second face of the first layer and a second face having said data tracks thereon.

11. A data storage medium as set forth in claim 10 wherein said carrier has an outer periphery defined at least in part by a cut line extending through said first and second carrier layers but not through said substrate.

12. A data storage medium as set forth in claims 1 wherein said substrate comprises a film which is ink-receptive to allow ink graphics to be printed thereon.

13. A data storage medium as set forth in claims 1 or 2 wherein said at least one carrier comprises a plurality of carrier layers superposed on said substrate, said plurality of carrier layers including an ink-receptive layer printed with ink graphics.

14. A data storage medium as set forth in claim 1 wherein said lamination comprises a border area at least partially surrounding said at least one carrier, and wherein said border area is ink-receptive and printed with ink graphics.

15. A data storage medium as set forth in claim 14 wherein said ink graphics are printed in 2-color ink.

16. A data storage medium as set forth in claim 14 wherein said ink graphics are printed in 4-color ink.

17. A data storage medium as set forth in claims 1 or 2 wherein said at least one carrier comprises a plurality of data storage carriers on said substrate.

18. A data storage medium as set forth in claim 17 wherein each carrier of said plurality of carriers is in the

form of a circular disc having a central aperture formed therein.

19. A data storage medium as set forth in claims 1 or 2 wherein said lamination is rolled up to form a roll from which a selected length of lamination can be dispensed.

20. A data storage medium as set forth in claims 1 or 2 wherein said lamination comprises a sheet having an opening therein for hanging the sheet from a display.

21. A data storage medium as set forth in claim 20 wherein said opening is sized for receiving a cantilever member of a display rack.

22. A data storage medium as set forth in claims 1 or 2 wherein said lamination is resiliently bendable to a curvature having a radius in the range of 20mm - 500mm without substantial separation of the at least one carrier from the substrate and without adversely affecting the optic readability of the carrier.

23. A data storage medium as set forth in claims 1 or 2 wherein said lamination is resiliently bendable to a curvature having a radius in the range of 30mm - 200mm without substantial separation of the at least one carrier from the substrate and without adversely affecting the optic readability of the carrier.

24. A data storage medium as set forth in claims 1 or 2 wherein said lamination is resiliently bendable to a curvature having a radius in the range of 35mm - 100mm without substantial separation of the at least one carrier from the

substrate and without adversely affecting the optic readability of the carrier.

25. A data storage medium as set forth in claims 1 or 2 wherein said at least one carrier has a flexural modulus in the range of 1200-3450 Mpa.

26. A data storage medium as set forth in claims 1 or 2 wherein said substrate is compatible with adhesive for securing the lamination to an object.

27. A data storage medium as set forth in claim 26 wherein said substrate has adhesive thereon for affixing said lamination to said object.

28. A data storage medium as set forth in claims 1 or 2 wherein said substrate is of a generally limp, non-resilient material and said carrier is resiliently flexible.

29. A data storage medium as set forth in claims 1 or 2 wherein said lamination can be repeatedly flexed without adversely affecting the optic readability of said at least one carrier.

30. A thin, flexible, optically readable, data storage medium, comprising

a thin, flexible substrate, and

at least one thin, resiliently flexible optically readable data storage carrier releasably held on said substrate by a holding force having a peel strength in the range of 10-60 gr,

said at least one carrier being adapted to be peeled off the substrate for use with an optical reading device operable to read data on the carrier.

31. A data storage medium as set forth in claim 30 wherein said holding force has a peel strength in the range of 16-26 gr.

32. A data storage medium as set forth in claim 30 wherein said at least one carrier is held on said substrate without the use of adhesive.

33. A data storage medium as set forth in claims 30, 31 or 32 wherein said at least one carrier and substrate have mating faces with finishes sufficiently smooth to generate an attraction force between said faces, said holding force comprising, at least in part, said attraction force.

34. A data storage medium as set forth in claim 33 wherein said finishes have a roughness of less than 2 rms.

35. A data storage medium as set forth in claim 30 wherein said at least one carrier comprises a plurality of carrier layers, and wherein said carrier has an outer periphery defined at least in part by a cut line extending through said plurality of carrier layers but not through said substrate.

36. A thin, resiliently flexible, optically readable, data storage medium in combination with a consumer product, said combination comprising

a thin, flexible substrate,

at least one thin, resiliently flexible, optically readable data storage carrier releasably held on said substrate, said at least one carrier having an axis of rotation and optically readable data tracks generally concentric with said axis of rotation,

said substrate and said at least one carrier thereon forming a thin resiliently flexible lamination resiliently deformable from a planar configuration to a non-planar configuration without substantial separation of the at least one carrier from the substrate and without adversely affecting the optic readability of the carrier, and

material releasably securing the lamination to a surface of said consumer product in a position wherein the at least one carrier is accessible for removal from the substrate whereupon the at least one carrier is adapted resiliently to assume its said planar configuration for use with an optical reading device which is operable to rotate the carrier to read said data tracks on the carrier.

37. A combination as set forth in claim 36 wherein said surface of the consumer product is a non-planar surface, and wherein said material releasably secures the lamination to said non-planar surface with the lamination resiliently deformed to conform to said non-planar surface.

38. A combination as set forth in claim 37 wherein said non-planar surface is substantially rigid.

39. A combination as set forth in claim 37 wherein said non-planar surface is flexible.

40. A combination as set forth in claims 38 or 39 wherein said non-planar surface is curved.

41. A combination as set forth in claim 36 wherein said consumer product comprises a flexible package.

42. A combination as set forth in claim 36 wherein said material is an adhesive on said substrate.

43. A combination as set forth in claim 36 wherein said lamination can be repeatedly flexed without adversely affecting the optic readability of said at least one carrier.

44. A combination as set forth in claim 36 wherein said at least one carrier comprises a plurality of carrier layers, and wherein said at least one carrier has an outer periphery defined at least in part by a cut line extending through said plurality of carrier layers but not through said substrate.

45. A thin, resiliently flexible, optically readable, data storage medium in combination with a printed publication, said combination comprising

a thin, flexible substrate,

at least one thin, resiliently flexible, optically readable data storage carrier releasably held on said substrate, said at least one carrier having an axis of rotation and optically readable data tracks generally concentric with said axis of rotation,

said substrate and said carrier thereon forming a thin resiliently flexible lamination resiliently deformable from a planar configuration to a non-planar configuration without substantial separation of the at least one carrier from the substrate and without adversely affecting the optic readability of the carrier,

said lamination forming an integral part of said flexible printed publication, and the at least one carrier being adapted to be removed from the substrate for use with an optical reading device which is operable to rotate the carrier to read said data tracks on the carrier.



46. A combination as set forth in claim 45 wherein said printed publication is a magazine or catalog, and wherein said lamination is secured to a page of the magazine or catalog.

47. A combination as set forth in claim 46 wherein said substrate of the lamination is adhered to said page of the magazine or catalog.

48. A combination as set forth in claim 45 wherein said printed publication is a magazine or catalog, and wherein said lamination is bound in the magazine or catalog.

49. A combination as set forth in claim 45 wherein said printed publication is a magazine or catalog, and wherein said lamination is an insert placed loosely in the magazine or catalog.

50. A combination as set forth in claim 45 wherein said printed publication is a newspaper, and wherein said lamination is secured to a page of the newspaper.

51. A combination as set forth in claim 50 wherein said substrate of the lamination is adhered to said page of the newspaper.

52. A combination as set forth in claim 45 wherein said printed publication is a newspaper, and wherein said lamination is an insert placed loosely in the newspaper.

53. A combination as set forth in claim 45 wherein said printed publication is a book, and wherein said lamination is secured to part of the book.

54. A combination as set forth in claim 53 wherein said substrate of the lamination is adhered to said part of the book.

55. A combination as set forth in claim 45 wherein said printed publication is a book, and wherein said lamination is bound in the book.

56. A combination as set forth in claim 45 wherein said printed publication is a book, and wherein said lamination is an insert placed loosely in the book.

57. A combination as set forth in claim 45 wherein said printed publication is a mailing, and wherein said lamination is secured to a page of the mailing.

58. A combination as set forth in claim 45 wherein said printed publication is a mailing in an envelope, and wherein said lamination is an insert placed in the envelope.

59. A combination as set forth in claim 45 wherein said lamination can be repeatedly flexed without adversely affecting the optic readability of said at least one carrier.

60. A combination as set forth in claim 45 wherein said at least one carrier comprises a plurality of carrier layers, and wherein said carrier has an outer periphery defined at least in part by a cut line extending through said plurality of carrier layers but not through said substrate.